

8.21 SOMERSET COUNTY

This chapter presents information about stream conditions of potential management interest in Somerset County based on the 2000-2004 Maryland Biological Stream Survey (MBSS) results. Information from MBSS data collected between 1994 and 1997 can be found in MDNR 2001s.

8.21.1 Ecological Health

Based on the three ecological health indicators used by the MBSS, the overall condition of Somerset County streams during 2000-2004 was Poor (Figure 8-168). The FIBI results indicate that about 11% of the streams in the county were in Good condition, and 19% rated Good using the BIBI. In contrast, 65% of the streams in the county scored as Poor or Very Poor using the CBI, while 14% scored as Good and 26% scored as Fair. It should be noted that 60% of stream miles were not rated for fish (FIBI) because those miles met the criteria for blackwater streams or because they were dry and not sampleable for fish. There are no remaining blackwater streams in Maryland healthy enough to serve as reference sites for IBI development, so these streams could not be rated for fish.

Most streams with high IBI scores were located in the northeastern portion of the county. The highest rated stream in Somerset County using the Combined Biotic Index (CBI) was Pollitts Branch, while the lowest rated streams included Geanquakin Creek, Moore Branch, Monie Creek and Marumsc Creek (Table 8-41). In comparison, all stream sites sampled by Stream Waders volunteers rated as Poor or Very Poor for benthic macroinvertebrates (Table 8-42).

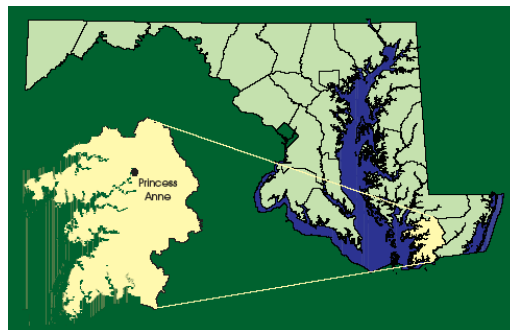
8.21.2 Physical Habitat

8.21.2.1 Overall Condition

Based on the Physical Habitat Index (PHI), 10% of the streams in Somerset County had Minimally Degraded habitat, 37% had Partially Degraded habitat, and 41% had Degraded habitat (Figure 8-169). No streams in the county were rated as having Severely Degraded habitat. The sites with Minimally Degraded habitat were all found in the northern half of the county, while more degraded sites were found in the southern portion of the county.

8.21.2.2 Trash

Nearly 65% of the stream miles in Somerset County were rated Optimal for trash (Figure 8-170). In contrast, no



streams were rated as Marginal or Poor. Most of the sites with higher trash levels were found in the vicinity of Princess Anne.

8.21.2.3 Channelization

About 96% of the stream miles in Somerset County were channelized (Table 8-4). The type of channelization found at MBSS sites was earthen ditches (Figure 8-171). The only sites not found to be channelized occurred on the eastern edge of the county.

8.21.2.4 Inadequate Riparian Buffer

About 5% of the stream miles in Somerset County had no riparian buffers during the 2000-2004 MBSS (Table 8-3). In addition, 5% of stream miles had severe breaks in existing riparian buffers. No geographic trend was apparent for either bufferless sites or sites with buffer breaks (Figure 8-172). Additional information about buffer breaks, analyzed by county, is provided in: 2000-2004 Maryland Biological Stream Survey Volume 10: Riparian Zone Conditions (http://www.dnr/Maryland.gov/streams/pubs/ea05-7_riparian.pdf).

8.21.2.5 Eroded Banks/Bedload Movement

Over 84% of the stream miles in Somerset County were rated as having minimal (Optimal) bank erosion (Figure 8-173). A likely reason for the high percentage of streams without bank erosion problems is the extent of channelization via ditching in the county. About 5% of stream miles were rated as Poor for bank erosion, and the remainder were rated as Suboptimal.

More than 25% of the stream miles in Somerset County were rated as having extensive bar formation (Figure 8-173). An additional 44% of streams had moderate bar formation, and the remaining 30% of stream miles were classified as having minor bar formation. No streams sampled in the county were devoid of bars. There were no geographic trends evident in bank erosion problems or degree of bar formation.

8.21.3 Key Nutrients

8.21.3.1 Nitrate-Nitrogen

Nearly 90% of the stream miles in Somerset County had nitrate-nitrogen levels in the range found in forested streams in Maryland (Figure 8-174). The remaining 10% of stream miles sampled had levels above background but below 5 mg/l, the threshold where biological impacts have been documented. No geographic trends were evident.

8.21.3.2 Total Phosphorus

In contrast with nitrate-nitrogen in the county, a higher proportion of stream miles had elevated levels of total phosphorus (Figure 8-175). Over 53% of stream miles had levels above those observed in forested Maryland streams; of these, 16% of the stream miles had levels above the threshold where biological effects may occur. Sites with low total phosphorus were clustered in the northeastern part of the county. The sites with high values were found in an area south of Princess Anne.

8.21.4 Stream and River Biodiversity

To provide a means to prioritize stream systems for biodiversity protection and restoration within each county and on a statewide basis, a tiered watershed and stream reach prioritization method was developed. Special emphasis was placed on state-listed species, stronghold watersheds for state-listed species, and stream reaches with one or more state-listed aquatic fauna. Fauna considered included stream salamanders, freshwater fishes, and freshwater mussels. Rare, pollution-sensitive benthic macroinvertebrates collected during the 1994-2004 MBSS were also used to identify the suite of watersheds necessary to conserve the full array of known stream and river biota in Maryland. A complete description of the biodiversity ranking process is found in: 2000-2004 Maryland Biological Stream Survey Volume 9: Stream and Riverine Biodiversity (http://www/dnr/Maryland.gov/streams/pubs/ea05-6_biodiv.pdf).

Of the nine watersheds found in Somerset County, Dividing Creek/ Nassawango Creek was classified as Tier 1, meaning that this watershed serves as a stronghold for one or more state listed aquatic species (Figure 8-176). In contrast, the Lower Wicomico River/Monie Bay/Wicomico Creek/Wicomico River Head watershed was among the lower ranking for stream and river biodiversity in the state (71st of 84). Any reaches that had either state-listed or GCN species, or high intactness values were highlighted to facilitate additional emphasis in planning restoration and protection activities.

8.21.5 Stressors

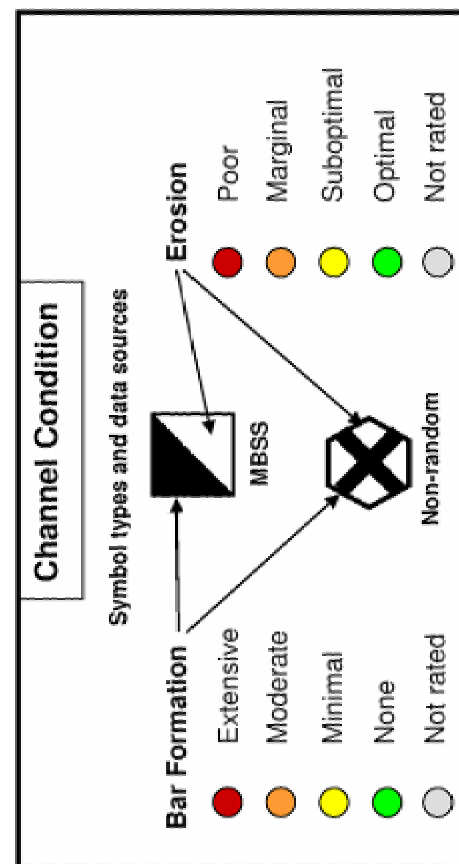
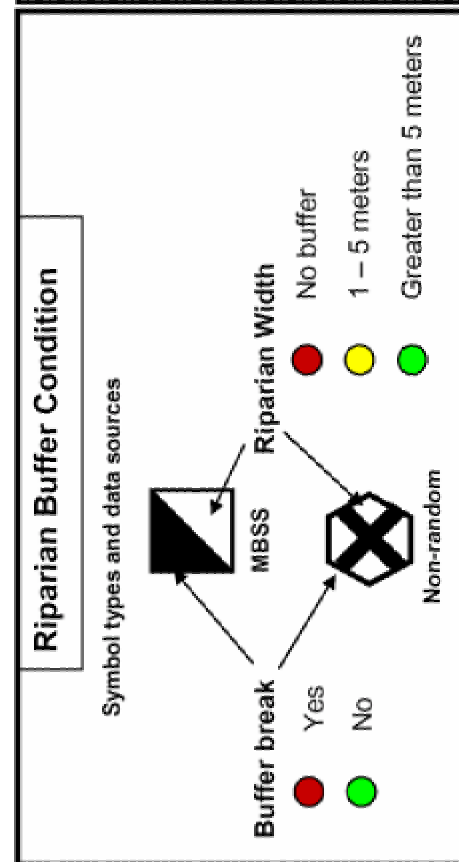
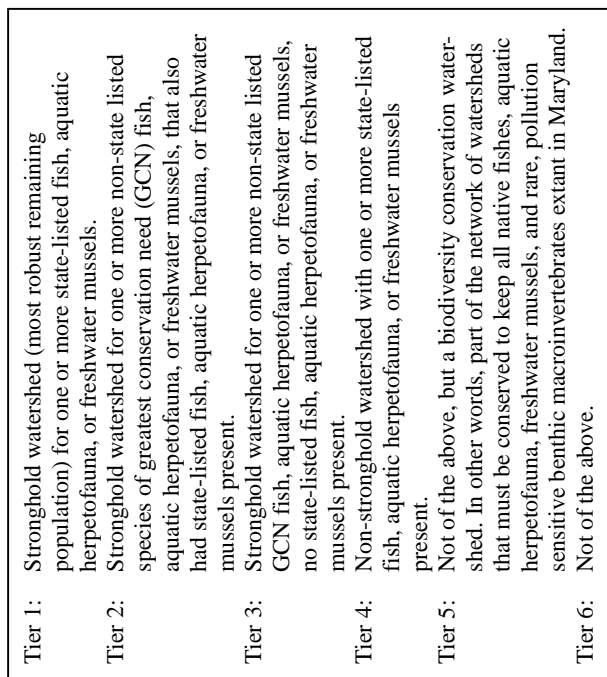
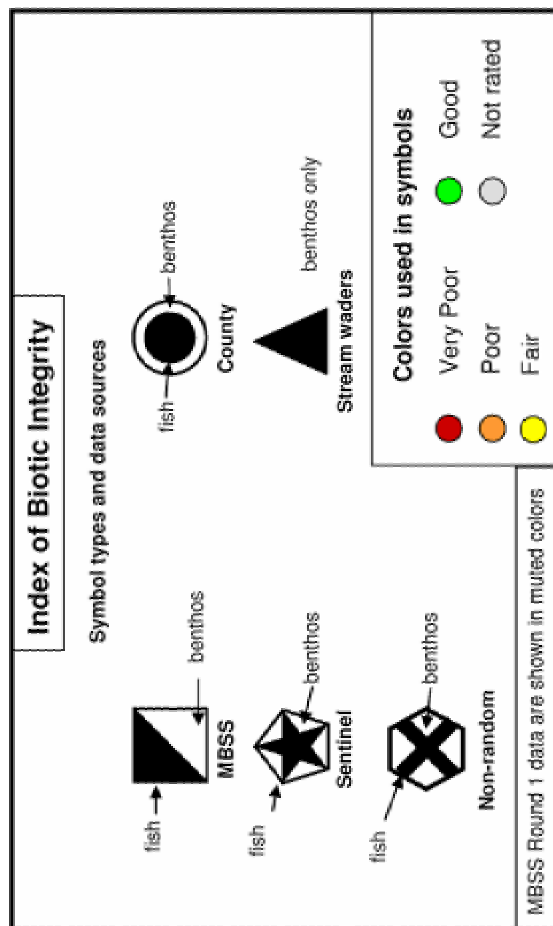
At 95% of stream miles, the most extensive stressor characterized by the MBSS in Somerset County during the 2000-2004 MBSS was channelized streams (Figure 8-5). Other stressors found extensively were: acid deposition (65% of stream miles); non-native terrestrial plants in the riparian zone (86% of stream miles); low dissolved oxygen (38% of stream miles); and non-native aquatic fauna (present in 32% of stream miles). Other, less common stressors included eroded banks and streams with no riparian buffer.

AN IMPORTANT NOTE ON BIODIVERSITY MANAGEMENT

Perhaps the largest ongoing natural resources restoration and protection effort in Maryland is associated with the Chesapeake Bay. In most cases, freshwater biodiversity is not specifically considered during placement and prioritization of Bay restoration and protection projects. In this report and in the more detailed volume in the series on aquatic biodiversity, a system of biodiversity ranking is presented to provide counties and other stewards with a means to plan appropriate protection and restoration activities in locations where they would most benefit stream and river species. Given the historically low level of funding for biodiversity protection and restoration in Maryland and elsewhere, the potential benefit of incorporating freshwater biodiversity needs into other efforts is quite large.

However, it is important to note that although freshwater taxa are the most imperiled group of organisms in Maryland, other groups and individual species not typically found in freshwater habitats are also at high risk and constitute high priority targets for conservation. In addition, freshwater taxa that prefer habitats such as small wetlands may not be well-characterized by the ranking system employed here. To conserve the full array of Maryland's flora and fauna, it is clearly necessary to use other, landscape-based tools and consider factors such as maintaining or reconnecting terrestrial travel corridors.

Key to MBSS 2000-2004 County Maps



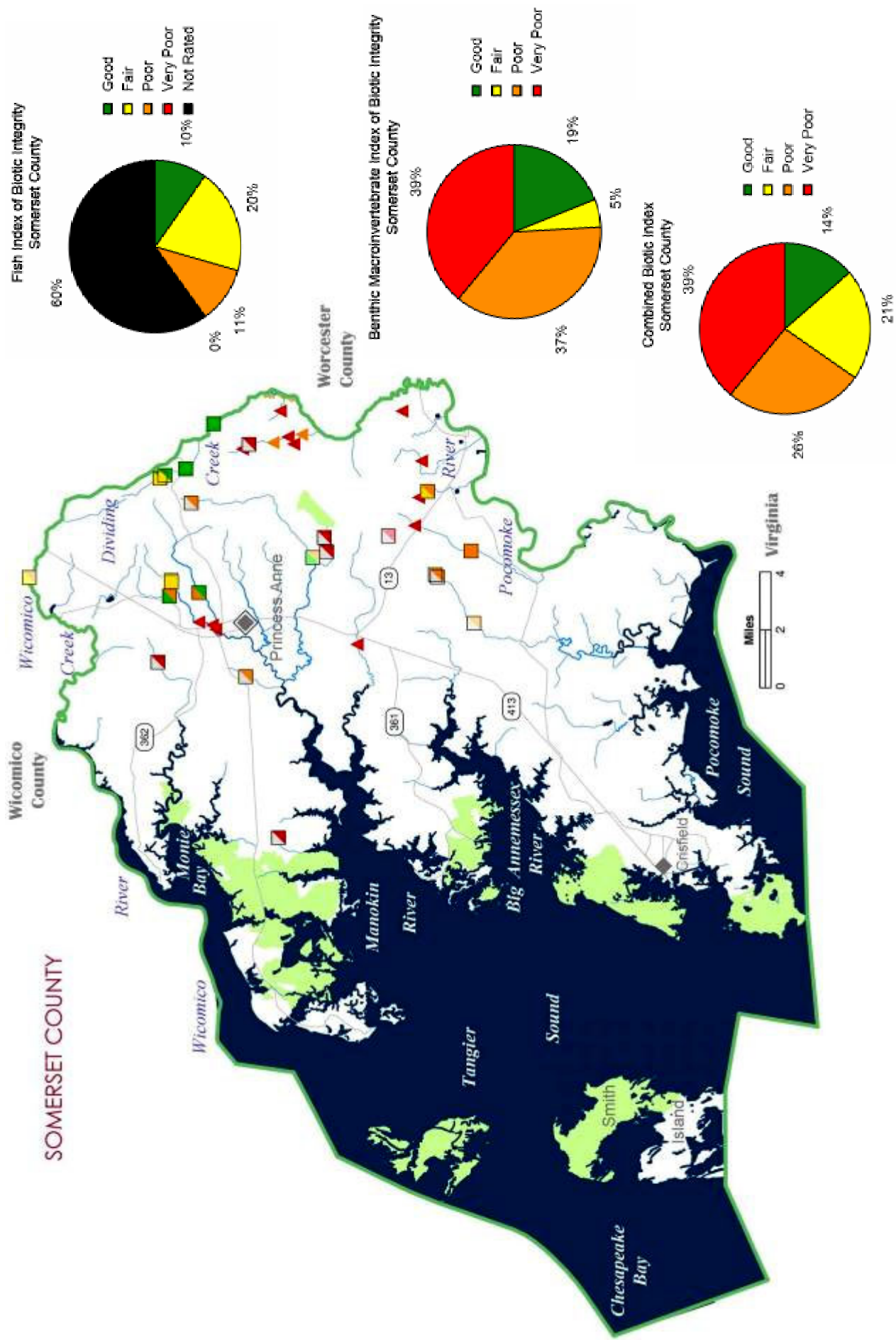


Figure 8-168. Benthic Index of Biotic Integrity (BIBI) and Fish Index of Biotic Integrity (FIBI) pie charts and map of stream health for Somerset County streams sampled by the MBSS during 1995-97 and 2000-2004 (pie charts represent 2000-2004 data only, Combined Biotic Index pie chart represents mean of FIBI and BIBI)

Table 8-42. Stream Waders sites sampled in Somerset County during 2000-2004, ranked by Family-level Benthic Index of Biotic Integrity

Somerset County - Stream Wader Sites				
WATERSHED	# GOOD	# FAIR	# POOR	# VERY POOR
Dividing Creek	0	0	2	5
Pocomoke River Lower	0	0	0	3
Manokin River	0	0	0	6
Monie Bay	0	0	0	6
Pocomoke River Upper	0	0	1	0
Wicomico Creek	0	0	0	3

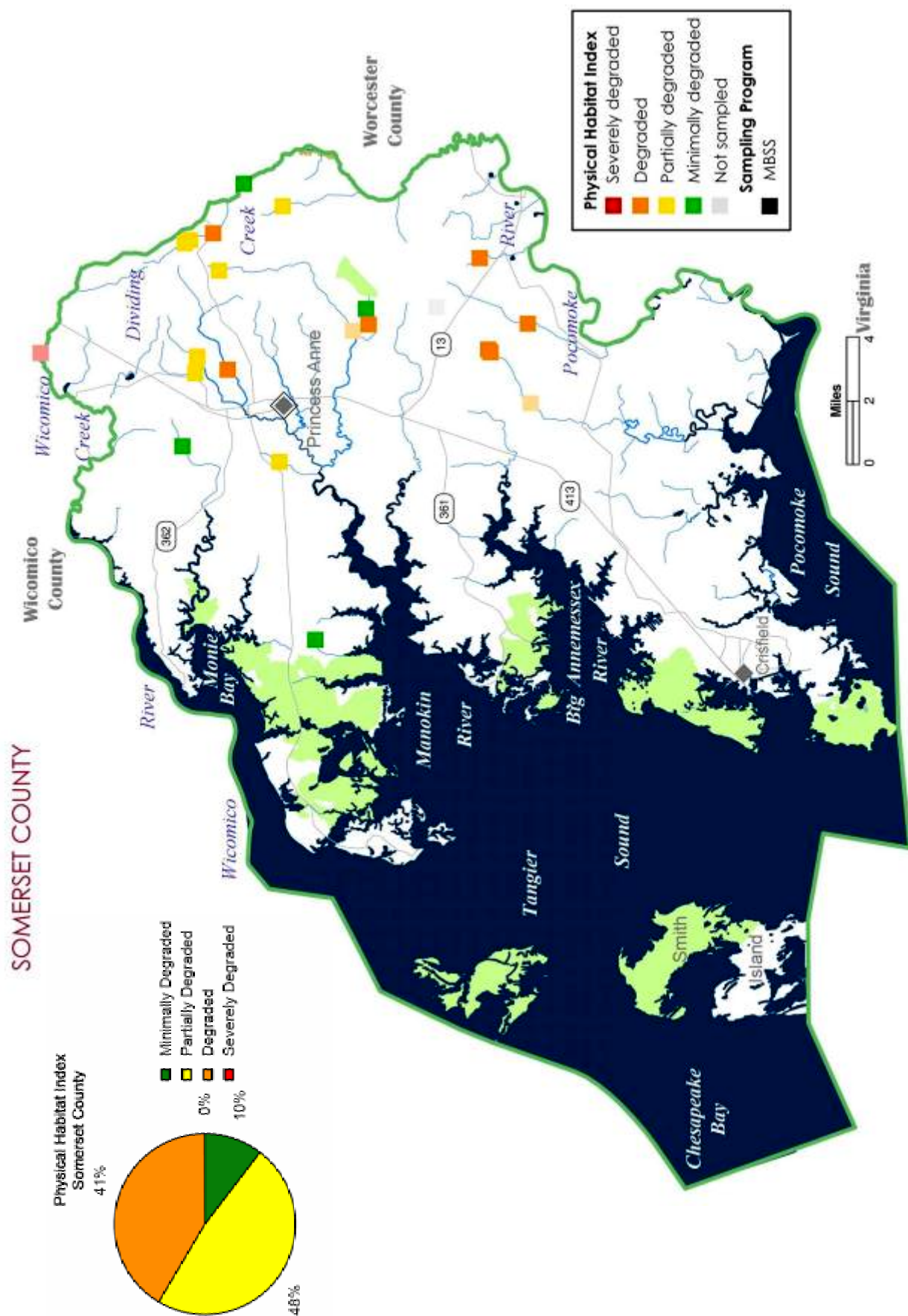


Figure 8-169. Physical Habitat Index (PHI) pie chart and map of stream habitat quality for Somerset County streams sampled by the MBSS during 1995-97 and 2000-2004 (pie chart represents 2000-2004 data only)

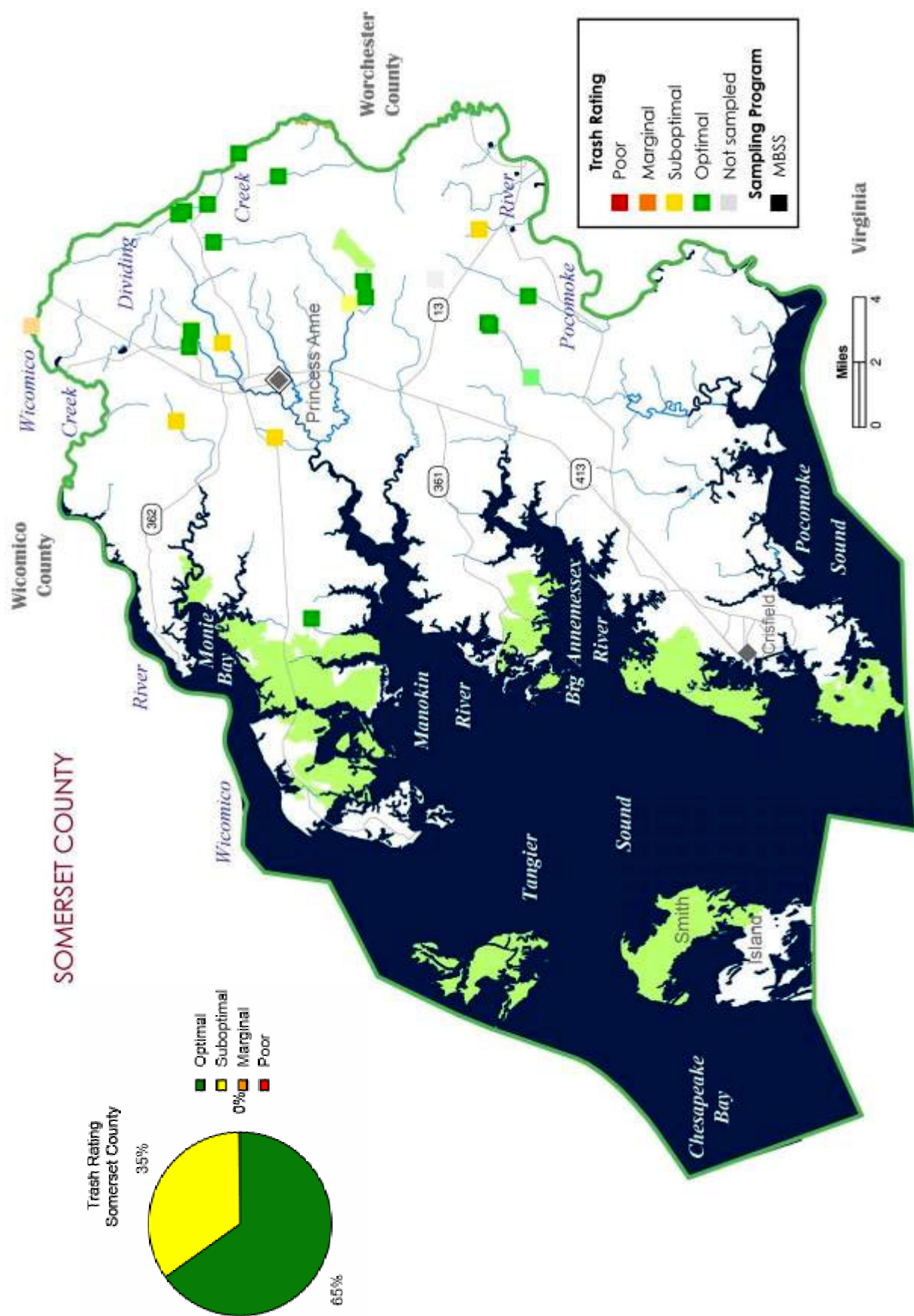


Figure 8-170. Pie chart and map of trash rating (0-20 scale) for Somerset County streams sampled by the MBSS during 1995-97 and 2000-2004 (pie chart represents 2000-2004 data only)

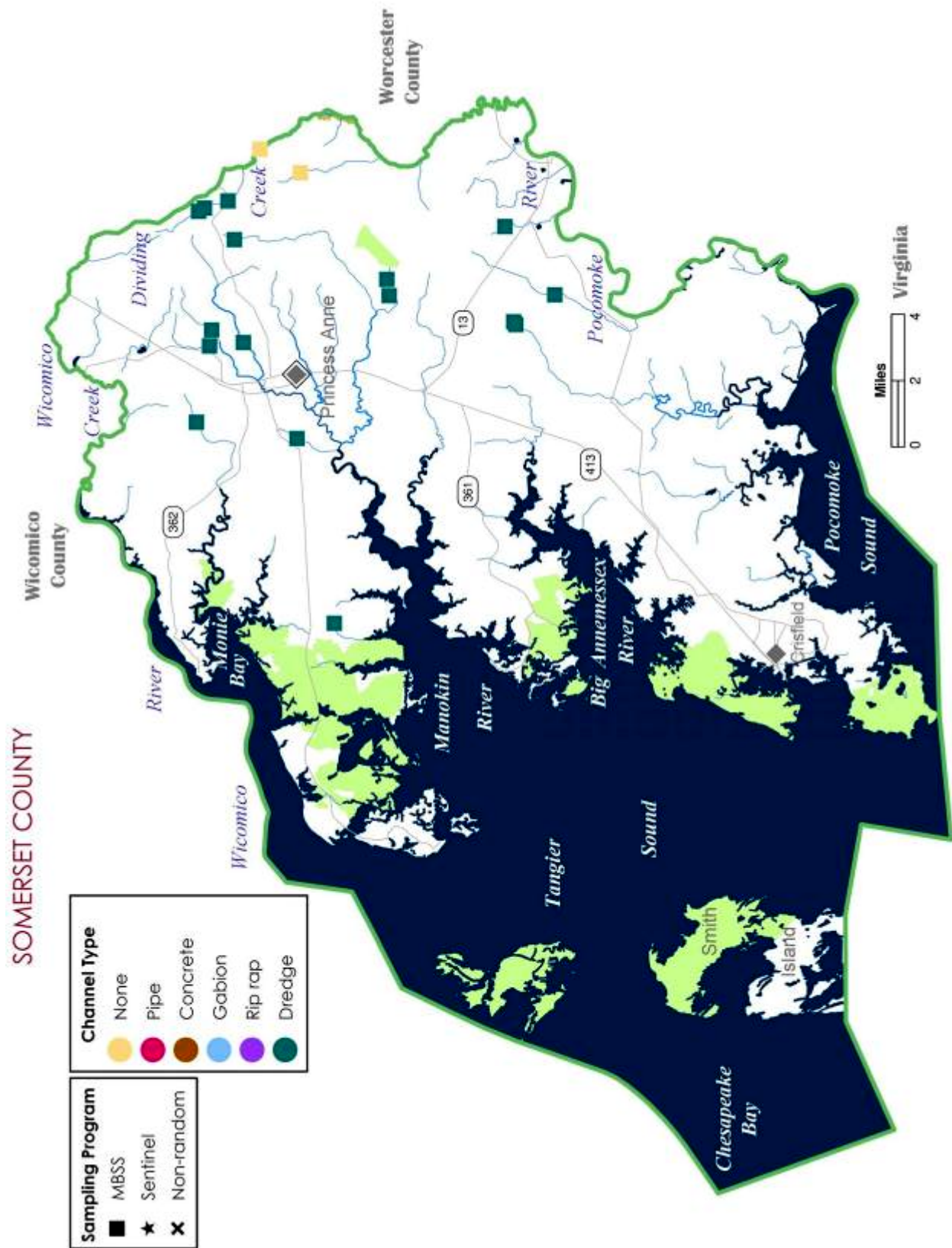


Figure 8-171. Map of channelized sites, by type, for Somerset County streams sampled by the MBSS during 2000-2004. *NOTE: When channelization is indicated, it does not necessarily mean that the entire 75m segment was affected.*

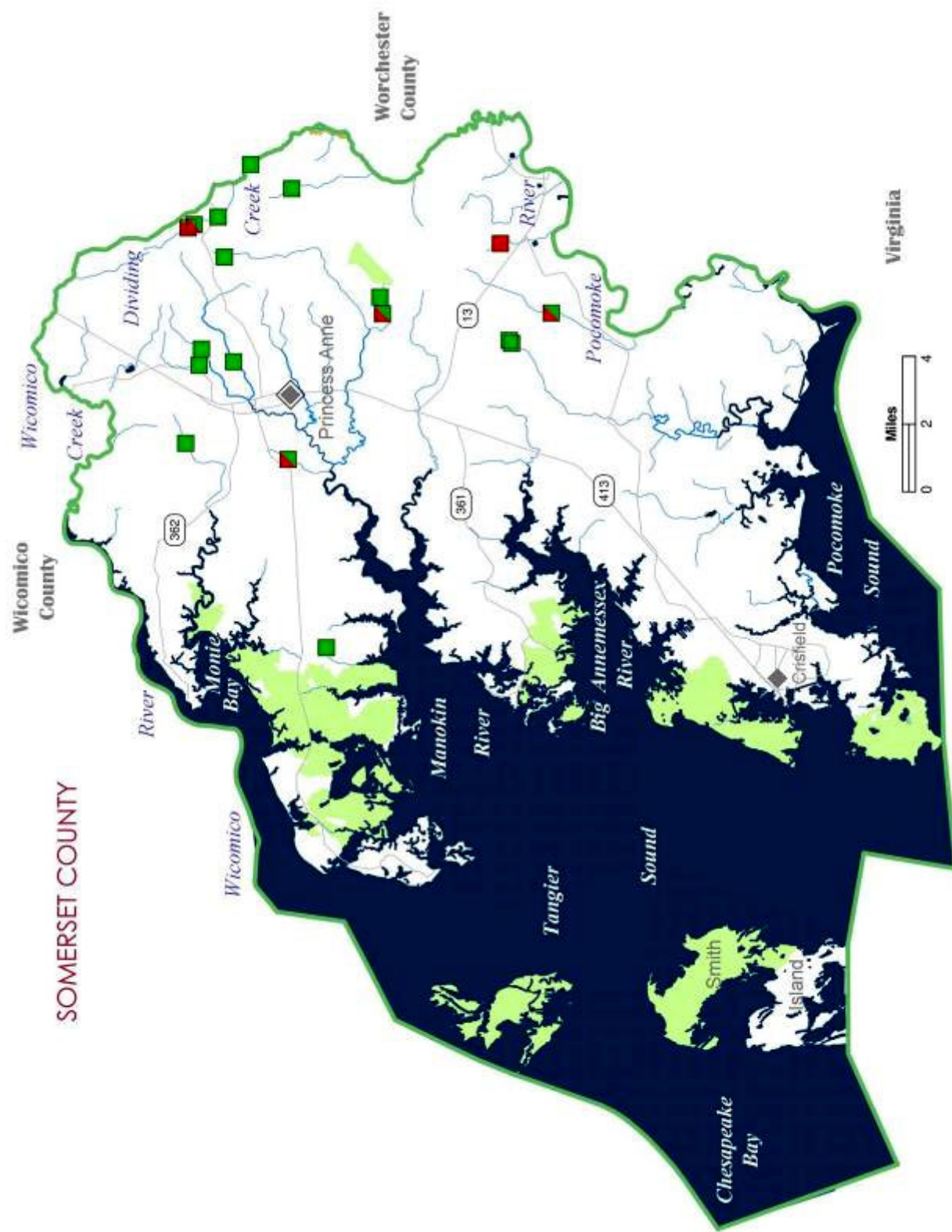


Figure 8-172. Map of sites with inadequate riparian buffers and buffer breaks for Somerset County streams sampled by the MBSS during 2000-2004. *NOTE: Multiple riparian buffer breaks sometimes occurred at a site; only the most severe were depicted.*

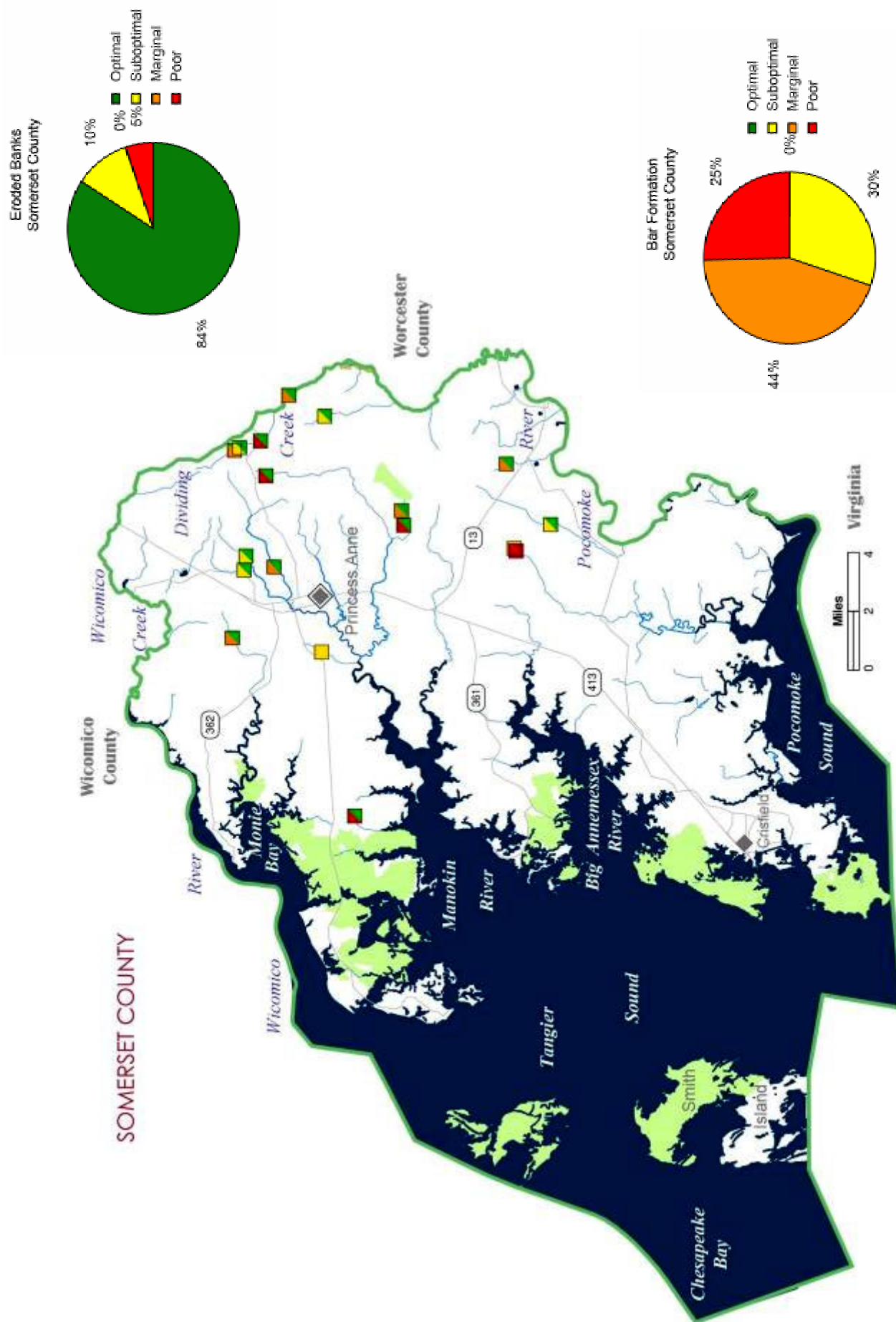


Figure 8-173. Pie charts and map of sites with eroded banks and instream bar formation for Somerset County streams sampled by the MBSS during 2000-2004

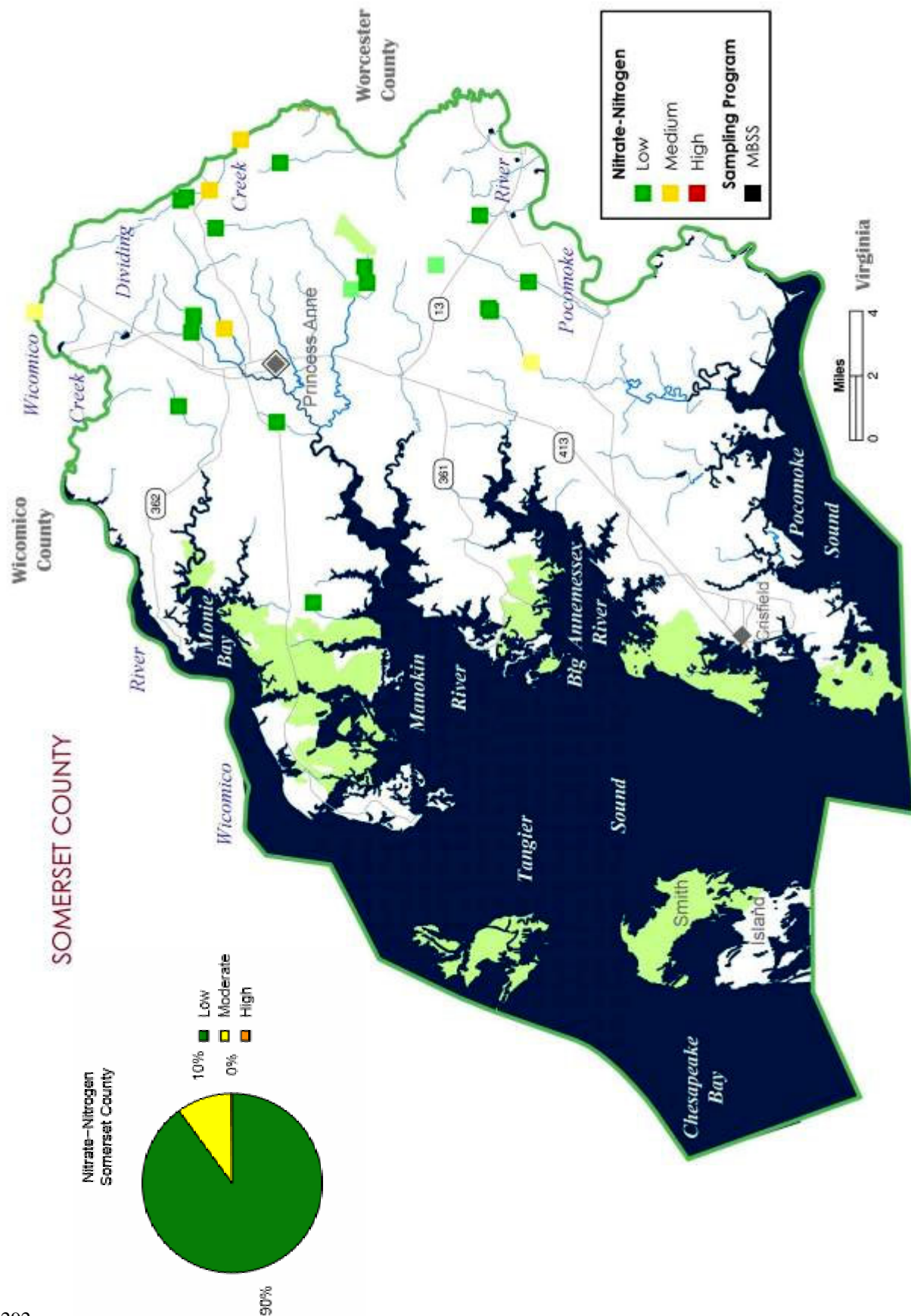


Figure 8-174. Pie chart and map of nitrate-nitrogen values (mg/l) for Somerset County streams sampled by the MBSS during 1995-97 and 2000-2004 (pie chart represents 2000-2004 data only) (Low = 1.0, Medium = 1.0 – 5.0, High = > 5.0)

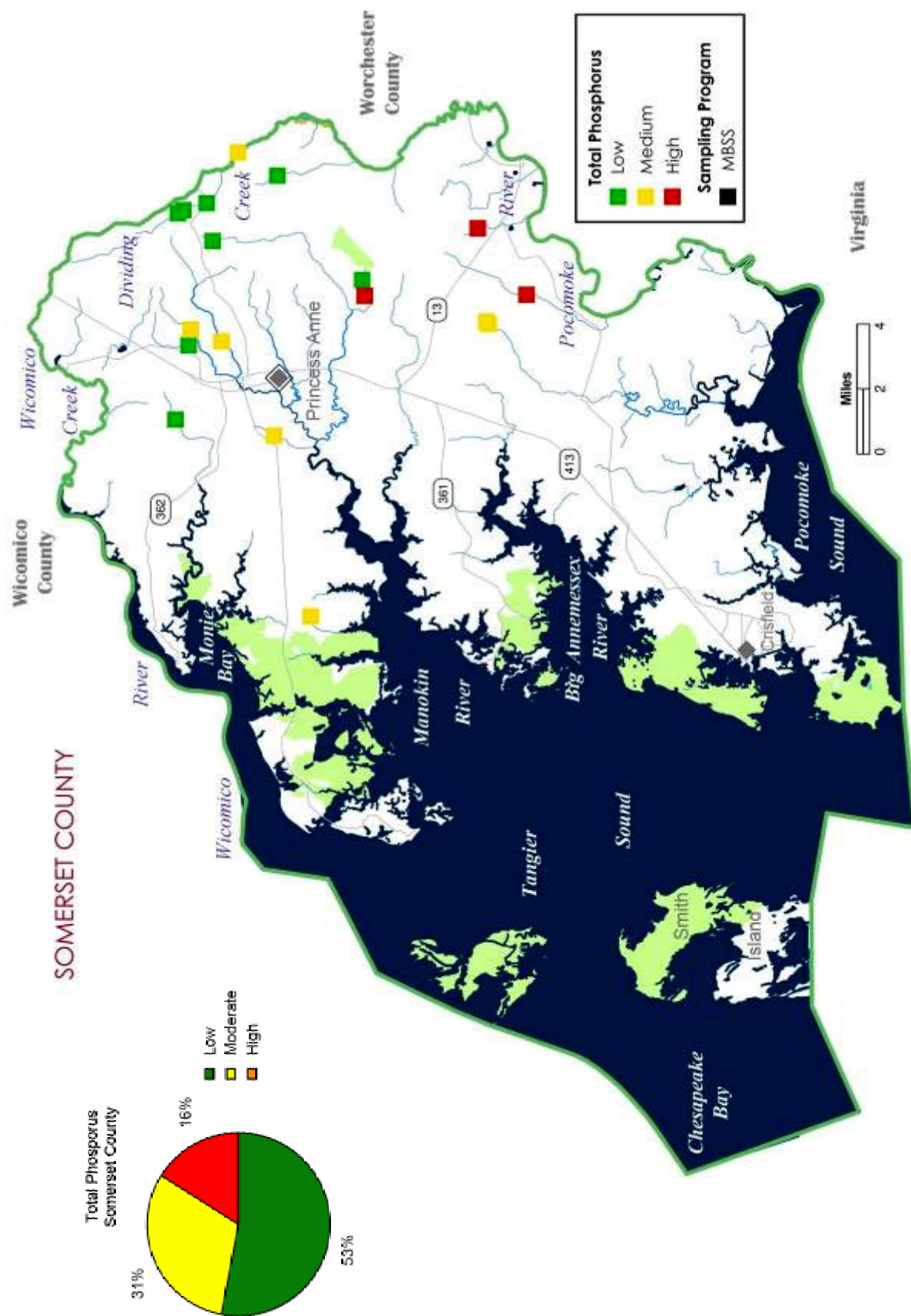


Figure 8-175. Pie chart and map of total phosphorus values (mg/l) for Somerset County streams sampled by the MBSS during 2000-2004 (Low = < 0.025, Medium = 0.025 – 0.07, High = > 0.07)

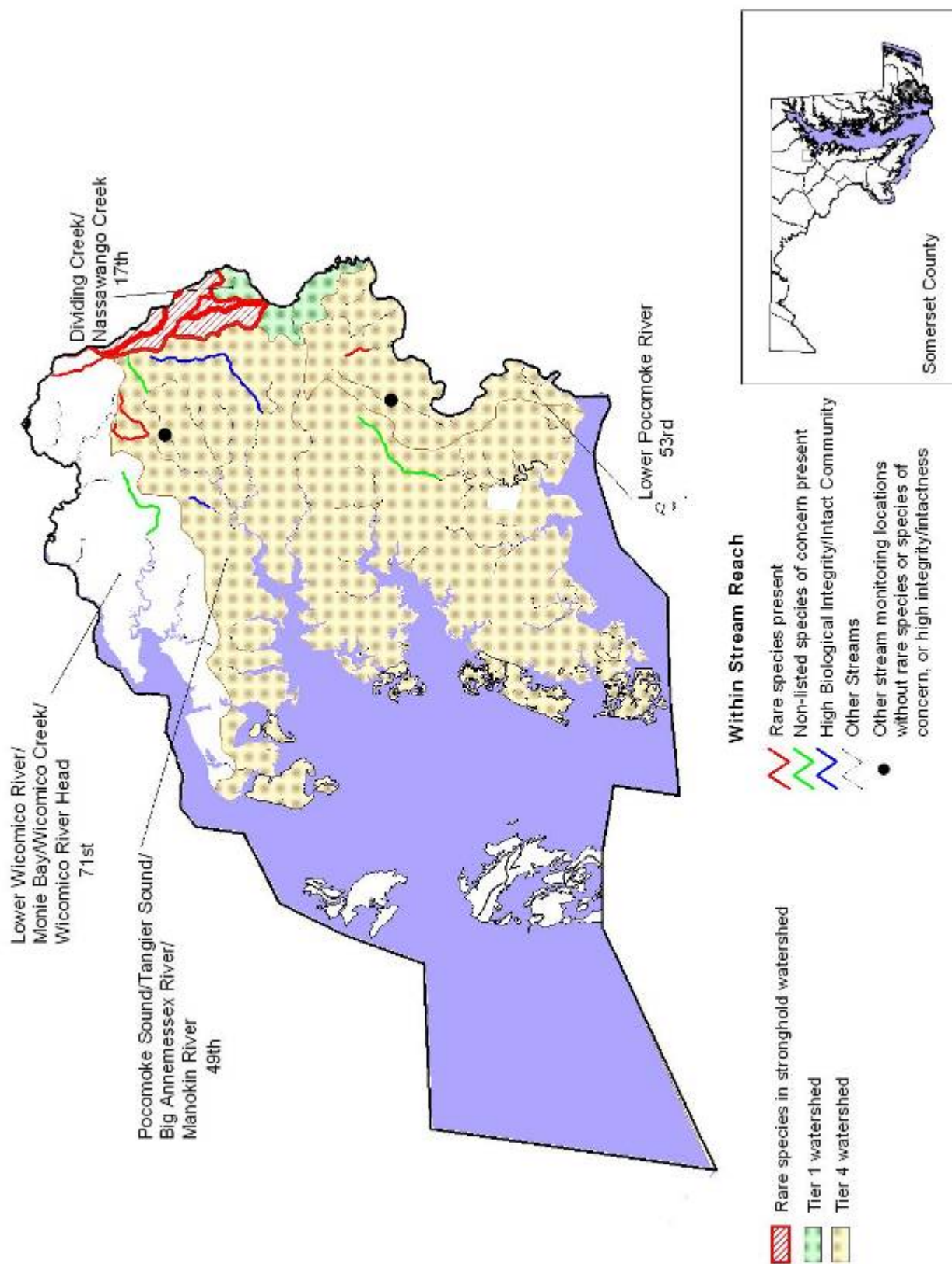


Figure 8-176. Aquatic Heritage Biodiversity Ranking map for Somerset County, by watershed. Data from MBSS 1994-2004, MBSS qualitative data, Raesly, unpub. data, Harris 1975, Thompson 1984, and DNR Natural Heritage Program database.